INS. KOREANA, 18(1): 79~86. March 30, 2001

Taxonomic Study of Four Unrecorded species of Pyraustinae (Lepidoptera, Crambidae) from Korea

Yong-Ki KIM and Yang-Seop BAE

Department of Biology, College of Natural Sciences, University of Inchon, Inchon, 402-749 Korea. E-mail: baeys@lion.inchon.ac.kr

Abstract Four species of Pyraustinae, *Agrotera posticalis* Wileman, *Udea stigmatalis* (Wileman), *Diathraustodes amoenialis* (Christoph), and *Pygospila tyres* (Cramer), are recorded for the first time from Korea. Among them, the genitalia of *U. stigmatalis* are described and figured for the first time. *Diathraustodes* and *Pygospila* are newly recorded genera to the Korean fauna. The adults and both sexes of genitalia are briefly described and illustrated.

Key words Taxonomy, Lepidoptera, Crambidae, Pyraustinae, new record, Korea

INTRODUCTION

The subfamily Pyraustinae, small to large size moths, is one of the largest groups of the family Crambidae and has worldwide distribution except for the Antarctic continent, comprising about 7,400 described species (Heppner, 1991). The first reference to the Korean fauna of Pyraustinae was made by Leech (1889), based on three new species, *Glyphodes bipunctallis, Polythlipta liguidalis,* and *Coptobasis segnalis*. Thence, the Korean subfamily was studied by Okamoto (1924), Shibuya (1928), Maruda (1929), Nagayama and Okamoto (1940), Park (1976, 1983, 1993), and Shin and Kim (1995). Quite recently, Bae (in press) published a catalogue of the Pyraloidea of Korea in the "Pyraloidea: Pyraustinae and Pyralinae Economic Insects of Korea 9" (Insecta Koreana Suppl. 16). In the catalogue, a total of 192 species of 83 genera is enumerated including the synonyms, diagnosis, host plants, general biology, and local distributions of the species.

In the present study, four species, *Agrotera posticalis* Wileman, *Udea stigmatalis* (Wileman), *Diathraustodes amoenialis* (Christoph), and *Pygospila tyres* (Cramer) of Pyraustinae, are recorded for the first time from Korea, and the genitalia of *U. stigmatalis* is described and figured for the first time.

Abbreviations for the collection, provincial names, and other are as follows: UIB- Department of Biology, University of Inchon, Inchon; GW- Gangweon; GG- Gyeonggi; CB- Chungbug; GB- Gyeongbug; GN- Gyeongnam; JN- Jeonnam; TL- type locality; TS- type species.

SYSTEMATIC ACCOUNTS

Agrotera Schrank, 1802

Agrotera Schrank, 1802, Fauna Boica 2(2): 163. TS: *Phaelaena nemoralis* Scopoli, 1763, by monotypy.
Tetracona Meyrick, 1884. TS: *Aediodes amathealis* Walker, 1859, by monotypy.
Sagariphora Meyrick, 1894. TS: *Sagariphora heliochlaena* Meyrick, 1894, by monotypy.

Agrotera posticalis Wileman, 1911

(Figs 1, 5, 7)

Agrotera posticalis Wileman, 1911, Trans. ent. Soc. Lond. 1911: 374; Inoue, 1980: 91; Inoue, 1982, 1: 332, 2: 231, pl. 38: 65. TL: Japan.
Agrotera sp.: Bae, 2001. (*in press*)

Diagnosis. Wingspan, 11-18 mm (Fig. 1). This species is very similar to *A. nemoralis* in the superficial appearance, but can be distinguished from the latter in having straight median line and pale yellowish markings on basal area of forewing.

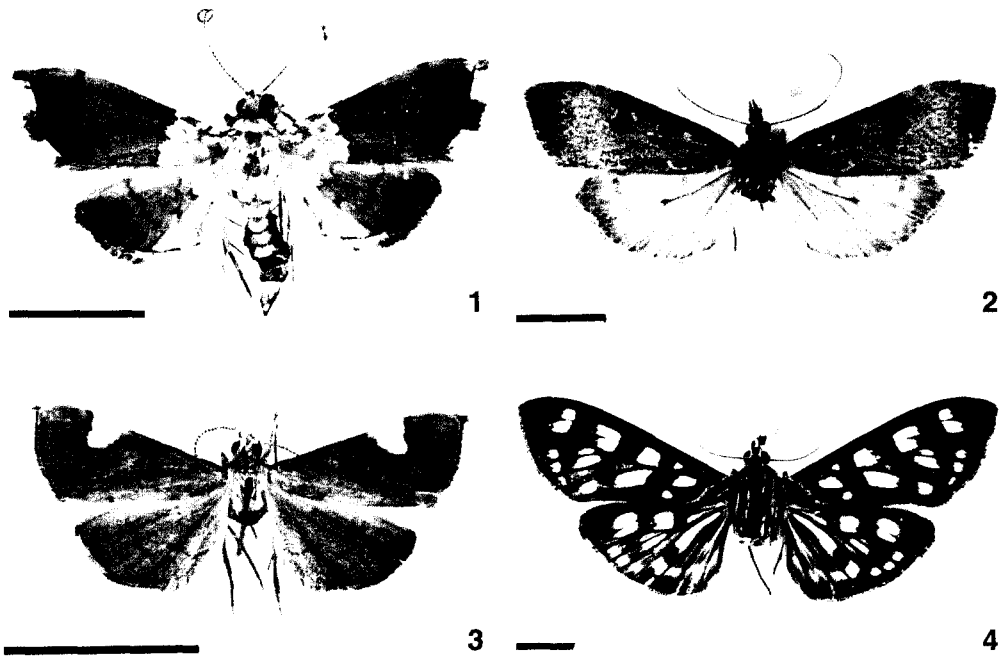
Male genitalia (Fig. 5). Uncus small, triangular, apically pointed. Valva elliptical, apically pointed; harpe well developed, scythe-shaped. Vinculum very long (as long as valva), scoop-shaped, with rounded posterior margin. Aedeagus wrinkled membranous, about as long as valva, with numerous minute setae; cornutus consisting of one stout thorn-like process.

Female genitalia (Fig. 7). Ostium bursae and ductus bursae not separated; ductus seminalis originating from the posterior part of corpus bursae; corpus bursae long, wrinkled membranous; signa with numerous serrates.

Material examined. GW- 1♂, Mt. Daedeoksan, 11 VII 1997 (Y.S. Bae & B.W. Lee); 1♀, Mt. Jeombongsan, 12 VIII 1997 (Paek, Lee, Jang, Choi & Kim); 3♀, Mt. Weolaksan, 9 VIII 1997 (Y.S. Bae & N.H. Ahn). GG- 1♂, Is. Daebu, 28 VI 1997 (M.K. Paek); 2♂, Mt. Cheolmasan, 14 VI 1996 (Y.S. Bae & D.S. Yang); 1♂, Mt. Cheonggyesan, Gwacheon, 25 VII 1996 (Bae, Paek, Lee & Ahn), 1♀, same locality, 26 VII 1997 (Jeon, Lee, Jang & Gu); 1♂, Mt. Soyosan, 14 IX 1996 (Y.H. Jeong), gen. sl. no. UIB-3839 (♂), 1♂, same locality, 7 VII 1996 (Bae, Paek, Lee & Ahn); 1♂, Lake Mulwang, Shiheung, 30 VIII 1996 (M.K. Paek), 1♂, Temp. Yongkung, Is. Yeongjong, 21 VII 1995 (Y.S. Bae & M.K. Paek). CB- 1♂, Mt. Gayasan, 24 VII 1997 (B.W. Lee & N.H. Ahn); 1♂, Chupungryeong, 30 VIII 1996 (M.K. Paek). CN- 1♀, Mt Oseosan, 6 VIII 1999 (Bae, Lee & Kim), gen. sl. no. UIB-3837 (♀). GN- 1♀, Swamp. Upo, Changnyeong, 28 VII 1997 (M.K. Paek). JN- 1♂, 2♀, Jungsan-li, Mt. Jirisan, 20 VIII 1996 (Bae, Paek & Lee), gen. sl. no. UIB-3841 (♂). -coll. UIB.

Distribution. Korea (GW, GG, CB, CN, GN, JN) and Japan (Honshu, Shikoku, Kyushu, Tsushima, Yakushima)

Remarks. The genus *Agrotera* is widely distributed in the Palaearctic, Indo-Australian, African, and Madagascal regions, comprising about 30 species. The adults of member are very similar to each other, and needs a further study for the Korean species.



Figs 1-4. Adults: 1, *Agrotera posticalis* Wileman; 2, *Udea stigmatalis* (Wileman); 3, *Diathraustodes amoenialis* (Christoph); 4, *Pygospila tyres* (Cramer). (Scales: 5.0 mm)

Udea Guenée, 1845

Udea Guenée, 1845, in Duponchel, Cat. méth. Lépid. Eur.: 209. TS: *Pyralis ferrugalis* Hübner, 1796, by monotypy.

Stantira Walker, 1863. TS: *Stantira variegata* Walker, 1863, by monotypy.

Melanomecyna Butler, 1883. TS: *Melanomecyna stellata* Butler, 1883, by subsequent designation of Fletcher and Nye, 1984: 89.

Mnesictena Meyrick, 1884. TS: *Mnesictena marmarina* Meyrick, 1884, by subsequent designation of Hampson, 1899: 231.

Protocolletis Meyrick, 1888. TS: *Scopula constricta* Butler, 1882, by monotypy.

Protaulacistis Meyrick, 1899. TS: *Protaulacistis cataphaea* Meyrick, 1899, by monotypy.

Notophytis Meyrick, 1932. TS: *Pyrausta bryochloris* Meyrick, 1899, by original designation and monotypy.

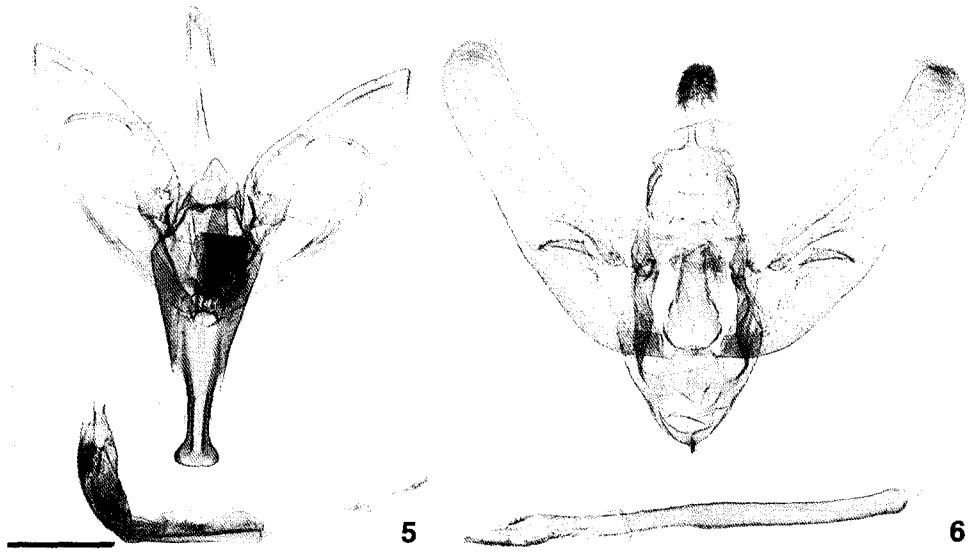
Udea stigmatalis (Wileman, 1911)

(Figs 2, 6, 8)

Pionea stigmatalis Wileman, Trans. Ent. Soc. Lond., 1911: 387. TL: Japan.

Udea scoparialis nec Hampson: Inoue, 1959, 1: 255, pl. 172, fig. 27.

Udea stigmatalis: Inoue, 1980: 92; Inoue, 1982, 1: 364, 2: 240, 43: 37.



Figs 5-6. Male genitalia: 5, *Agrotera posticalis* Wileman; 6, *Udea stigmatalis* (Wileman). (Scale: 0.5 mm)

Diagnosis. Wingspan, 25-27 mm (Fig. 2). This species is similar to *Udea orbicentralis* (Christoph) in the superficial appearance, but can be separated from the latter by the acute apex on the forewing and the distinct median vein of the hindwing.

Male genitalia (Fig. 6). Uncus mushroom-like, distally rounded, with numerous setae near apex; juxta large, sclerotized. Valva simple, smoothly rounded at apex; harpe horn-shaped. Aedeagus slender, about 1.3 times as long as valva, with pointed lobe at apex; cornuti consisting of about 25 minute sclerites.

Female genitalia (Fig. 8). Ostium bursae sclerotized, narrow cup-shaped; ductus bursae slender, with sclerotized ring near junction of corpus bursae; ductus seminalis originating from the posterior part of ductus bursae; corpus bursae membranous; signum rhomboidal, with minute serrates.

Material examined. GW- 6♂, 2♀, Mt. Hambaeksan, Taebaek, 13 VI 1999 (Bae, Lee & Ahn), gen. sl. no. UIB- 3829(♀), 3833(♂). -coll. UIB.

Distribution. Korea (GW) and Japan (Hokkaido, Honshu).

Remarks. This species was originally described based on one male specimen collected in Japan. The both sexes of genitalia, hitherto unknown, are described and figured for the first time. The genus *Udea* is known with 29 species in Europe, 25 species in Russia, and 53 species in the Neotropical region.

Diathraustodes Hampson, 1896

Diathraustodes Hampson, 1896, Fauna Br. India (Moths) 4: 189 (key), 223. TS: *Diathraustodes leucotrigona* Hampson, 1896, by original designation and monotypy.

Diathraustodes amoenialis (Christoph, 1881)

(Figs 3, 9)

Amaurophanes amoenialis Christoph, 1881, Bull. Soc. imp. Nat. Mosou 56 (1): 30. TL: Russia (Amur).
Diathraustodes fulvovusus (nec Hampson): Inoue, 1982, 1: 329, 2: 229, pl. 38: 44.
Diathraustodes amoenialis: Inoue, 1988: 93, fig. 5d.

Diagnosis. Wingspan, 11 mm (Fig. 3). This species is quite similar to Indian species *D. fulvofusus*, but can be distinguished from the latter by the shape of the white costal marking of the forewing, the posterior margin of the marking is nearly flat or slightly rounded (Inoue, 1988).

Female genitalia (Fig. 9). Ostium bursae broad cup-shaped; ductus bursae long, about twice as long as corpus bursae; ductus seminalis originating from posterior part of ostium bursae; corpus bursae membranous; signum absent.

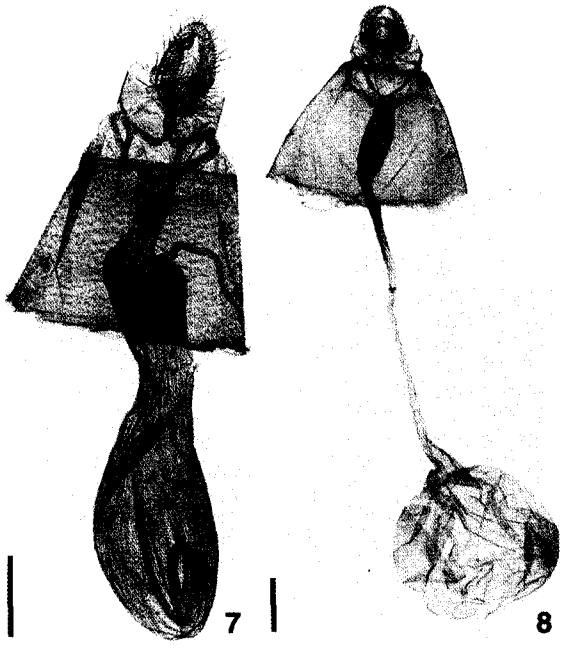
Material examined. GB- 1♀, Mt. Sobaeksan, Yeongpung, 17 VII 1998 (Bae, Lee, & Song), gen. sl. no. UIB-3642 (♀). -coll. UIB.

Distribution. Korea (GB), Japan (Honshu), China, and Russia (Amur).

Remarks. Only one female specimen was collected at Mt. Sobaek in the central part of Korea. The genus *Diathraustodes* is containing one species in Korea and Japan.

Pygospila Guenée, 1854

Pygospila Guenée, 1854, in Boisduval & Guenée, Hist. nat. Insectes (Spec. gén. Lépid.) 8: 312. TS:



Figs 7-8. Female genitalia: 7, *Agrotera posticalis* Wileman; 8, *Udea stigmatalis* (Wileman). (Scales: 0.5 mm)

Phalaena tyres Cramer, 1780, by subsequent designation of Hampson, 1896: 361.

Lomotropa Lederer, 1863. TS: *Pygospila costiflexalis* Guenée, 1854, by monotypy.

Telespasta Swinhoe, 1906. TS: *Pygospila cuprealis* Swinhoe, 1892, by original designation and monotypy.

***Pygospila tyres* (Cramer, 1789)**

(Figs 4, 10)

Phalaena tyres Cramer, 1789, Uitlandsche Kapellen 3: pl. 263: C. TL: India.

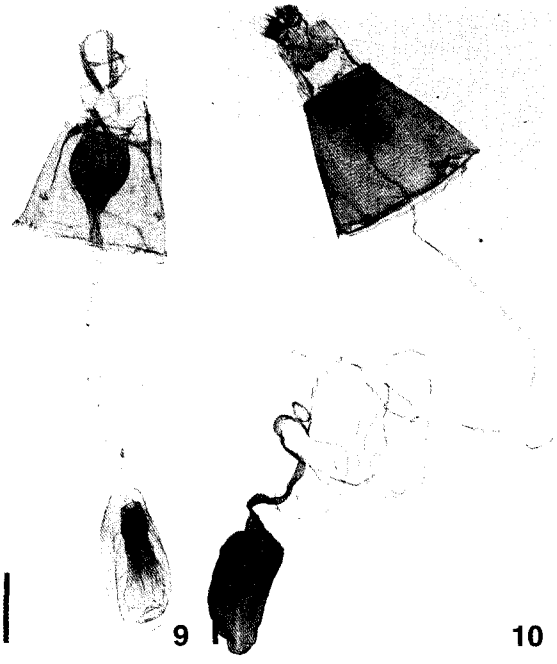
Pygospila tyresalis Guenée, 1854, in Boisduval & Guenée, Hist. nat. Insectes (Lepid.) 8: 312, 340. TL: India, Bangladesh.

Pygospila tyres: Inoue, 1965: 179; Inoue, 1982, 1: 348, 2: 235, pl. 41: 18; Robinson, *et al.* 1995: 172; Yamanaka, 1995: 189; 1998: 109, pl. 126, fig. 14.

Diagnosis. Wingspan, 43 mm (Fig. 4). This species can be distinguished from the allies by the following characters: forewing and hindwing ground colour blackish blue, violescent metallic lustrous, the forewing with 15 semitransparent white markings, the hindwing with 11-13 white markings.

Female genitalia (Fig. 10). Ostium bursae sclerotized, funnel-shaped; ductus bursae very long, about four times as long as the length of abdomen (about 40 mm); corpus bursae rather sclerotized, with irregularly minute serrates; signum rudiment.

Material examined. GG- 1♀, Mt. Hwaaksan, 18 VIII 1998 (Paek, Ahn & Kim), gen. sl. no. UIB-



Figs 9-10. Female genitalia: 9, *Diathraustodes amoenialis* (Christoph); 10, *Pygospila tyres* (Cramer). (Scales: 0.5 mm)

3813(♀). -coll. UIB.

Distribution. Korea (GG), Japan (Shikoku, Kyushu, Tsushima, Yakushima), China, Taiwan, and Nepal.

Remarks. Only one female specimen was collected at Mt. Hwaaksan, the Northern part of Korea. The genus *Pygospila* is distributed in the Indo-Australian, African, and Palaearctic regions, with nine species.

ACKNOWLEDGMENTS

We would like to express our cordial thanks to Prof. K.T. Park of Kangweon National University, Chuncheon, for his guidance and suggestions during the research. Many thanks are also due to Dr. M.K. Paek of National Parks Authority of Korea and Messrs J.H. Kim, C.M. Lee, and H.G. Oh of UIB, N.H. Ahn and B.W. Lee of Osaka Prefecture University, Japan for their assistance in the collecting. This research was partially supported by the National Institute of Agricultural Science and Technology (1998-2000).

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韓國産 들명나방亞科(나비目, 포충나방科)의 4未紀錄種

金 龍 基 · 裵 良 燮

인천대학교 생물학과

포충나방科 (나비목)에 속하는 들명나방아과의 4種, *Agrotera posticalis* Wileman, *Udea stigmatalis* (Wileman), *Diathraustodes amoenialis* (Christoph), *Pygospila tyres* (Cramer)을 우리 나라에서 처음으로 보고하며, 이중에서 *Diathraustodes*屬과 *Pygospila*屬은 우리 나라에서 처음 기록한다. 이들의 분류학적 특징을 간략히 再起載하고, 채집된 성충 및 암 · 수 生殖器를 도해하였다. 특히 *Udea stigmatalis*는 생식기의 특징을 최초로 기재하며 도해하였다.

검색어 : 나비목, 포충나방과, 들명나방아과, 분류, 한국

(Received: January 13, 2001)
(Accepted: March 2, 2001)